REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Office Action mailed March 1, 2004. Applicants also appreciate the Examiner's indication that Claim 8 contains allowable subject matter and would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph and amended to independent form. Applicants have amended Claim 8 to overcome the rejections under 35 U.S.C. § 112, and respectfully submit that it is patentable for the reasons that are explained below.

Prosecution of the present application now has been transferred to the undersigned at a new law firm. Based on this transfer of prosecution responsibilities, the undersigned has taken a fresh look at the prosecution of the present application. Claims 1 and 5-11 have been amended herein, and Claim 12 has been added. No new matter has been added by the claim amendments or by the new claim. Applicants respectfully submit that each of the claims are patentable for the reasons that are explained in detail below.

The Objection to the Oath/Declaration Should be Withdrawn:

A new declaration has been submitted herewith for Ivan Chan and Russell Brown. The original declaration by Andrew Bishop was not defective.

The Objection to the Drawings Should be Withdrawn:

The Office Action objects to Fig. 7 because it is contended that upon the falling edge of training pattern 525, that errBelow 565 should be logic low and noerrBelow566 should be logic high. (Office Action, pg. 2). Applicants agree with the Examiner and have submitted a corrected Fig. 7 herewith in which errBelow 565 is illustrated as logic low and noerrBelow566 is illustrated as logic high upon the falling edge of training pattern 525. Support for this drawing correction is provided by, for example, the

schematic block diagram in Fig. 5 of the filter adaptation circuit and, in particular, the signals falling edge 575, Below 455, Belownot 456, noerrBelow 566, and errBelow 565, and the corresponding description on page 9, lines 10-16 of these signals. Accordingly, Applicants respectfully submit that the objection to the drawings should be withdrawn.

The Objection to the Claims Should be Withdrawn:

Claims 1 and 5-10 have been amended. Applicants respectfully submit that the objections to Claims 1 and 5-10 should be withdrawn based on these claim amendments.

Rejection of the Claims under 35 U.S.C. § 112 Rejections Should be Withdrawn:

The Office Action rejected Claims 1-6 under 35 U.S.C. § 112, first paragraph, on the basis that the filter adaptation circuit recites that it receives a comparison signal and an input signal. (Office Action, pg. 4). Claims 1 and 6 have been amended to remove the recitation of an "input signal" from the filter adaptation circuit. Applicant respectfully requests withdrawal of the rejection of Claim 1-6 in view of these amendments.

The Office Action has rejected Claim 8 under 35 U.S.C. § 112, second paragraph, on the basis of the recitation "the amplitude control signal".   (Office Action, pg. 4). Applicants respectfully submit that this rejection has been overcome by the amended Claim 8.

Independent Claims 1 and 7 are Patentable Over Bazes et al. in view of Gasparik:

Amended Claim 1 recites:

1.   A circuit for adaptively amplifying an input signal, the circuit comprising:
an adaptive filter connected to receive the input signal and to amplify a predetermined frequency range of the input signal by an amount based on an amplification control signal input to the adaptive filter to generate an amplified input signal;
a comparator connected to receive the amplified input signal from the adaptive filter and a predetermined threshold signal, the comparator outputting a

comparison signal that compares the amplified input signal to the predetermined threshold signal; and

a filter adaptation circuit connected to receive the comparison signal and to modify the amplification control signal based on the comparison signal and based on a known training pattern.

Claim 1, and analogous method Claim 7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,991,339 to Bazes et al. (Bazes) in view of U.S. Patent No. 6,643,324 to Gasparik. However, Applicants respectfully submit that to establish a *prima facie* case of obviousness, three basic criteria must be met. The prior art reference or references when combined *must teach or suggest all the claim limitations*. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and there must be a reasonable expectation of success of the combination. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found *in the prior art*, not in applicant's disclosure. See MPEP § 2143. As affirmed by the Court of Appeals for the Federal Circuit, to support combining or modifying references in a § 103 rejection, evidence of a suggestion, teaching, or motivation to combine or modify must be *clear and particular*, and this requirement is not met by merely offering broad, conclusory statements about teachings of references. *In re Dembiczak*, 50 USPQ2.d 1614, 1617 (Fed. Cir. 1999). In an even more recent decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, *would have selected these components for combination in the manner claimed. In re Kotzab*, 55, USPQ2d 1313, 1317 (Fed. Cir. 2000).

In particular, as noted above, Claim 1 recites a circuit for adaptively amplifying an input signal. The circuit includes an adaptive filter, a comparator, and a filter

adaptation circuit. The comparator outputs a comparison signal that compares an amplified input signal from the adaptive filter to a predetermined threshold signal. The filter adaptation circuit modifies an amplification control signal based on the comparison signal and based on a known training pattern. The adaptive filter amplifies a predetermined frequency range of the input signal by an amount based on the amplification control signal.

The specification explains that the adaptive amplification circuit can operate in a training mode, in which the filter adaptation circuit uses "a known waveform, i.e., training signal, to calibrate the adaptive filter before pertinent data is sent from host 120 to hardware devices 140a... 140m, thereby minimizing ISI effects and allowing for the reliable detection of transmitted information." (Specification, pg. 8, lines 1-4). The specification goes on to describe that the "training pattern may comprises a pulse train of alternating 1's and 0's, e.g., 1010..., or may be a more complex pseudo-random bit pattern ... provided each apparatus knows a priori the bit pattern corresponding to the training waveform used for calibration." (Specification, pg. 8, lines 4-8). For example, FIGs. 5 and 7 show a training pattern 525 that is used by the filter adaptation circuit 230.

The Office Action contends at Page 5, that "Bazes teaches a filter adaptation circuit (406) connected to receive the digital comparison signal to modify the amplification control signal (zero selection signal) based on the digital comparison signal. (note col.7, line 40-col.8, line 53)". However, FIG. 4 of Bazes shows that an adaptation control unit 406 receives a "transition data" signal from a clock and data recovery block 410 and a "symbol error" signal from a symbol error detector 412. Bazes describes that the transition data contains "information about the locations and number of transitions in each clock period (e.g., phase information) which is extracted from the detector output signal d(t)." (Bazes, col. 4, lines 27-30). The "transition data signal is provided to the adaptation control unit 406, which can then perform an average jitter determination, and cause the parameters of the variable filter 402 to be varied accordingly until the average

jitter is minimized". (Bazes, col. 4, lines 30-34). The symbol error detector 412 "determines whether the data carried by the receive data signal is valid at the bit level." (Bazes, col. 4, lines 37-38). The symbol error signal then "triggers the execution of an adaptation cycle" by the adaptation control unit 406. (Bazes, col. 4, lines 45-46).

Accordingly, the adaptation control unit 406 is not described as, and does not appear to function as, a filter adaptation circuit that modifies an amplification control signal based on a comparison signal, which compares an amplified input signal to a predetermined threshold signal, and based on a known training pattern. Moreover, Bazes is devoid of any description or suggestion of any other circuit that would modify an amplified input signal as recited in Claim 1.

To the contrary, Bazes appears to teach away from the use of a known training pattern by describing, and showing in FIG. 10, a process that determines average jitter in a received signal based only on the signal itself, and then seeks to minimize the jitter. (Bazes, col. 8, lines 22-28, 33-35, and 48-53). Accordingly, the adaptation control unit 406 does not appear to know, nor have any need to know, a priori any pattern in the received signal in order to determine average jitter.

There does not appear to be any motivation or suggestion in Bazes itself to modify its teaching to provide the recitations of Claim 1. The Office Action has cited Gasparik on the contention that it teaches "equalization of input signal[s], equalizing high frequency signal ... [and] equalizing SCSI signals". (Office Action, pg. 6). Accordingly, the Office Action does not appear to suggest that Gasparik supplies any of the teachings identified herein as missing from Bazes, and Applicants submit that it does not. Moreover, Applicants submit that the Office Action has provided no clear and particular suggestion, teaching, or motivation for combining Bazes with Gasparik to provide the recitations of Claim 1.

Accordingly, Applicants respectfully submit that a prima facie case of obviousness has not been made in the Office Action. Accordingly, Applicants request withdrawal of the rejection of Claim 1.
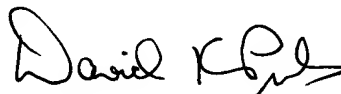
Claim 7 is a method analog of Claim 1 and is patentable for substantially the same reasons that were described above with regard to Bazes in view of Gasparik.

The dependent claims are patentable at least based on the patentability of the independent claims from which they depend as discussed above.

CONCLUSION

In light of the above amendments and remarks, Applicants respectfully submit that the above-entitled application is now in condition for allowance. Favorable reconsideration of this application, as amended, is respectfully requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (919) 854-1400.
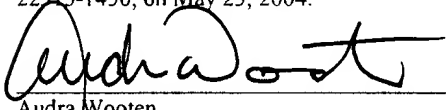
Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 25, 2004.

Audra Wooten